

This Page Is Inserted by IFW Operations
and is not a part of the Official Record

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images may include (but are not limited to):

- BLACK BORDERS
- TEXT CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT
- ILLEGIBLE TEXT
- SKEWED/SLANTED IMAGES
- COLORED PHOTOS
- BLACK OR VERY BLACK AND WHITE DARK PHOTOS
- GRAY SCALE DOCUMENTS

IMAGES ARE BEST AVAILABLE COPY.

**As rescanning documents *will not* correct images,
please do not report the images to the
Image Problem Mailbox.**



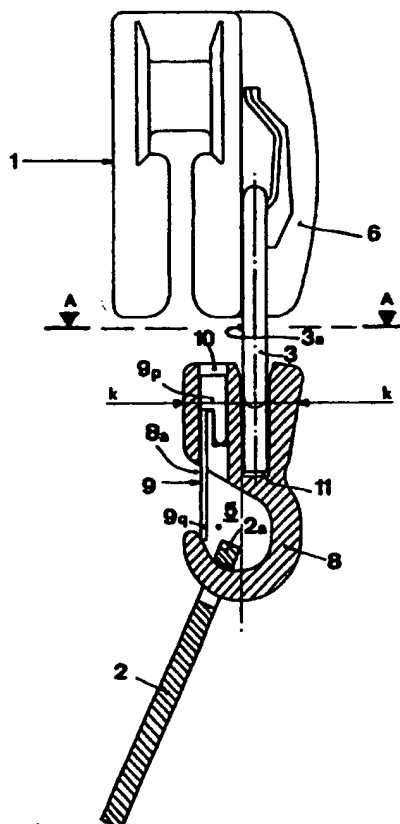
INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁶: A44B 19/26	A1	(11) International Publication Number: WO 97/37558 (43) International Publication Date: 16 October 1997 (16.10.97)
(21) International Application Number: PCT/IB97/00001 (22) International Filing Date: 6 January 1997 (06.01.97) (30) Priority Data: 0896/96 9 April 1996 (09.04.96) CH (71) Applicant (for all designated States except US): RIRI S.A. [CH/CH]; CH-6850 Mendrisio (CH). (72) Inventor; and (75) Inventor/Applicant (for US only): BERNASCONI, Sergio [CH/CH]; Via Vela, 45, CH-6834 Morbio Inferiore (CH). (74) Agent: FIAMMENGHI-FIAMMENGHI; Via San Gottardo, 15, CH-6900 Lugano (CH).		(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, US, UZ, VN, ARIPO patent (KE, LS, MW, SD, SZ, UG), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG). Published <i>With international search report.</i>

(54) Title: UNIVERSAL JOINT FOR CONNECTING A SLIDER TO THE DRAWER OF A ZIPPER

(57) Abstract

In a joint (4) for connecting slide (1) of a zipper and corresponding drawer (2) that includes a first cavity (3a) to connect it to bridge (6) of said slider (1) and a second cavity (5) for connecting it to a collar (2a) of said drawer (2), said first cavity is made in a separate part (3) that is not integral with joint (4) but is connected thereto by means of attachments.



FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AL	Albania	ES	Spain	LS	Lesotho	SI	Slovenia
AM	Armenia	FI	Finland	LT	Lithuania	SK	Slovakia
AT	Austria	FR	France	LU	Luxembourg	SN	Senegal
AU	Australia	GA	Gabon	LV	Latvia	SZ	Swaziland
AZ	Azerbaijan	GB	United Kingdom	MC	Monaco	TD	Chad
BA	Bosnia and Herzegovina	GE	Georgia	MD	Republic of Moldova	TG	Togo
BB	Barbados	GH	Ghana	MG	Madagascar	TJ	Tajikistan
BE	Belgium	GN	Guinea	MK	The former Yugoslav Republic of Macedonia	TM	Turkmenistan
BF	Burkina Faso	GR	Greece	ML	Mali	TR	Turkey
BG	Bulgaria	HU	Hungary	MN	Mongolia	TT	Trinidad and Tobago
BJ	Benin	IE	Ireland	MR	Mauritania	UA	Ukraine
BR	Brazil	IL	Israel	MW	Malawi	UG	Uganda
BY	Belarus	IS	Iceland	MX	Mexico	US	United States of America
CA	Canada	IT	Italy	NE	Niger	UZ	Uzbekistan
CF	Central African Republic	JP	Japan	NL	Netherlands	VN	Viet Nam
CG	Congo	KE	Kenya	NO	Norway	YU	Yugoslavia
CH	Switzerland	KG	Kyrgyzstan	NZ	New Zealand	ZW	Zimbabwe
CI	Côte d'Ivoire	KP	Democratic People's Republic of Korea	PL	Poland		
CM	Cameroon	KR	Republic of Korea	PT	Portugal		
CN	China	KZ	Kazakhstan	RO	Romania		
CU	Cuba	LC	Saint Lucia	RU	Russian Federation		
CZ	Czech Republic	LI	Liechtenstein	SD	Sudan		
DE	Germany	LK	Sri Lanka	SE	Sweden		
DK	Denmark	LR	Liberia	SG	Singapore		
EE	Estonia						

Universal Joint for Connecting a Slider to the Drawer of a Zipper.

This invention pertains to the technological field of the design of zippers, i.e., the well-known devices that are used to create a reversible connection between two edges made of fabric, leather, or other materials.

5 To achieve this connection, two facing members, each of which consists of a row of appropriately shaped teeth, are connected to one another in a reversible manner using known methods by causing a slider to run along said members; said slider consists of a movable part connected to it which is stretched between the fingers in order to be able to exert on the
10 slider the force that is required to make it slide.

In some types of sliders, between the slider proper and said movable part, which based on its function is called a "drawer", is inserted a connecting joint that has two cavities;
15 one of said cavities is intended to mate with a raised part of said "bridge" of the slider, while the other cavity mates with a collar on the drawer.

According to the state of the art, said connecting joints are made in a single piece, for which reason said two
20 cavities are simply closed-edge holes into which either said bridge or the collar of the drawer is inserted.

This accounts for the fact, e.g., that, for sliders that are equipped with the joint in question, it is first necessary to insert the bridge into the corresponding cavity of the joint and then to attach the bridge itself to the body of the slider by pressing, bonding, or similar techniques. This involves an operation that is time-consuming and thus costly, in addition to being somewhat complex.

In addition, once a certain kind of drawer has been attached, it is no longer possible to detach it from the joint in order to replace it, either when it breaks or when the user wishes to use a drawer that has different esthetics and/or functional characteristics.

In order to avoid the drawbacks and advantages mentioned above, the inventor of this invention has conceived a new type of joint between the slider and the drawer, which joint has characteristics such that, during the phase of designing the parts of a zipper, it is possible to mate it even to a fixed bridge, thus making it integral with the slider; said characteristics also make it possible to hook a drawer up to the joint itself in a reversible manner such that, when so desired, it can be removed without difficulty.

More particularly, the object of the invention consists of a joint for connecting the slider of a zipper and the corresponding drawer, whereby said joint includes a first cavity for connecting it to the bridge of said drawer, which is characterized in the characterizing part of claim 1.

In the dependent claims, other characteristics of the joint are described that make it possible for the joint to be connected to the collar of the drawer in a reversible manner.

A more detailed description of a preferred embodiment of the joint according to the invention and its advantages will now be given, also referring to the attached drawings, where:

- Fig. 1 shows a side view of a slider attached to the joint of the invention, which in the figure is in longitudinal cutaway;

- Fig. 2 shows a cross-section through the joint of Fig. 1, made corresponding to a separate spring collar, which is used as a cavity for connecting the slider to the bridge;

- Fig. 3 shows a front view of the collar spring, which is designed to bend a metal wire.

Look first at Fig. 1: in it the connection of fixed bridge 6 of a slider 1 to joint 4 is made by connecting it to a collar spring 3, which in the embodiment in question is made by bending a wire made of steel or some other material that has good compressive strength characteristics.

Lower end 3s of said collar spring 3 is open, in such a way that bridge 6 can be inserted into it. Said end 3s is then inserted into a space 11 made in joint 4. When both collar spring 3 and its open lower end 3s are of the proper shape, joint 4 is secured inside of space 11 by means of simple pressure or punching force being exerted on the joint perpendicular to said joint and to said collar spring 3: the plastic deformation of the inside walls of space 11 of joint 4, which is therefore made of

metallic materials that are suitable to the task and are known to one skilled in the art, creates a reliable connection that locks spring 3 to joint 4. Obviously, it is possible to make on the inside walls of space 11 appropriate projections that are intended to increase the reliability of said locking action: this is not necessary, however, for the typical uses of zippers.

Collar spring 3, which is shown in Figs. 1, 2, and 3, is symmetrical with respect to its two median planes and has open ends that project outward, but they can be designed in other shapes that may be more suitable to particular applications.

Fig. 1 also shows the system according to the invention for ensuring the reversibility of the connection of collar 2a of a drawer 2 to joint 4: second cavity 5, which admits said hook, is composed of the bend of a hook 8 that has an opening 8a on one side; in the body of the joint itself is another attachment space 10, which is closed at the sides and into which is inserted an end 9p of a flexible straight spring 9 (see Figs. 1 and 2), which end is appropriately shaped in order to allow firm and reliable mating with joint 4.

From said end there extends a straight, flexible arm that is shaped in such a way as to enclose said bend of hook 8 with its free end 9q.

Straight spring 9 is positioned and designed in such a way as to enclose said opening 8a when no force is exerted on spring 9 itself and, owing to its elasticity, allows the edge of collar 2a of a drawer 2 to be inserted into it in order to connect the latter to joint 4. This makes it possible to insert

and remove a drawer 2 into and from the bend of hook 8 without any difficulty whatsoever.

This ensures the achievement of the advantages proposed by the inventor, i.e., those associated with producing a "universal" joint 4, in the sense that to it can be connected sliders of any type, including fixed-point sliders and which can optionally be replaced by the drawer connected to the joint itself.

By using a joint according to the invention and employing some other expedients, another design advantage can be achieved that has an impact on production time and cost: as a matter of fact, it is sufficient to put lower part 3s of collar spring 3 and associated end 9p of straight spring 9 into corresponding spaces 10, 11 of joint 4 in positions where they face one another and are traversed by a straight line K-K that is perpendicular to joint 4 itself, and it is possible simultaneously to secure collar spring 3 and straight spring 9 using a single pressing operation that is performed on joint 4 in the direction of said straight line K-K (the arrows in the figure indicate the direction in which the force is applied).

The preferred embodiment described thus far for the joint according to the invention is given simply by way of example: by modifying the shapes and characteristics of the various components and simply the means for attaching them, it is possible to produce innumerable embodiments to comply with design and functional requirements.

These embodiments will, however, fall within the framework of the protection offered by this application if they can be traced back to the descriptions given in the attached claims.

Claims

1. Joint (4) for connecting slider (1) of a zipper and corresponding drawer (2), whereby said joint includes a first cavity (3a) to connect it to bridge (4) of slider (1) and a second cavity (5) for connecting it to a collar (2a) of said drawer (2), wherein first cavity (3a) is made in a separate part (3) that is not integral with joint (4) but is connected thereto by means of attachments.

2. Joint according to claim 1, in which said first cavity is composed of a collar spring (3) that is open at one end (3s) for inserting the bridge of a slider and is made by bending a metal wire with a shape that is suitable for admitting said open end (3s) of collar spring (3) to be connected to joint (4) by means of pressure exerted on the latter.

3. Connecting joint according to one of the preceding claims, in which said second cavity for connecting joint (4) itself to collar (2a) of a drawer (2) is made up of loop (5) of a hook (8) that has an opening (8a) on one side; to the body of joint (4) is attached a longitudinally extended flexible element (9) that is positioned and sized in such a way as to enclose said opening (8a) when no force is applied to it and to allow, owing to its give, the edge of collar (2a) of said drawer (2) to be introduced in order to hook up to joint (4) itself.

4. Connecting joint according to claim 3, in which said longitudinally extended flexible element for enclosing opening (8a) of said hook (8) is a straight flexing spring (9) in which end (9p) that faces free end (9q) is of such a shape and size that it can be inserted into an attachment space (10) that is made in joint (4) itself and to be locked there by means of pressure applied to the latter.

5. Joint according to claim 4, in which end (9p) that is connected to straight spring (9) and lower open part (3s) of said collar spring (3) are positioned between two spaces (10, 11) that are made in joint (4) in positions facing one another and are traversed by a straight line (K-K) that is perpendicular to joint (4) itself, in such a way that it is possible to simultaneously secure straight spring (9) and straight spring (3) in a single operation of force applied to joint (4) in the direction of said straight line (K-K).

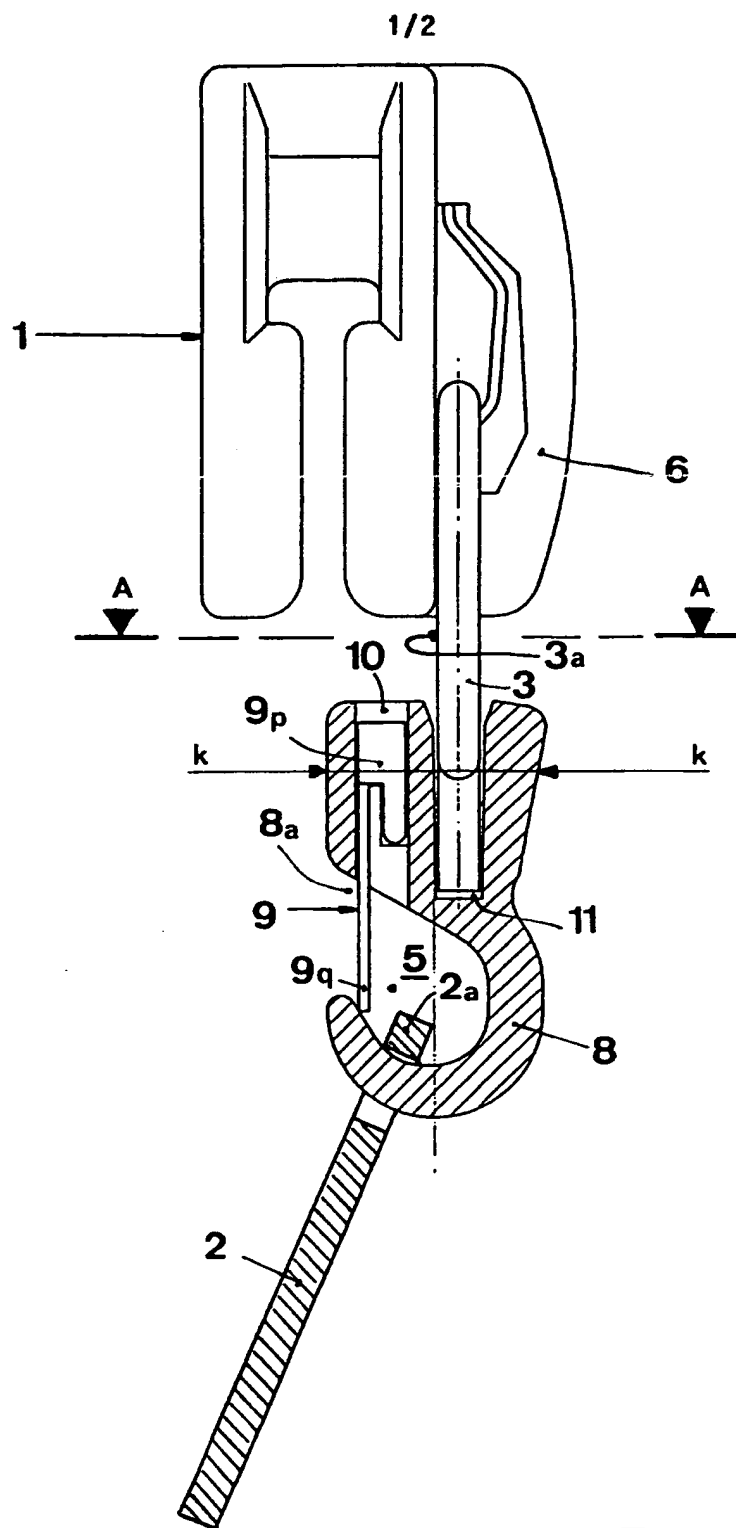


FIG.1

2/2

SECTION A-A

FIG.2

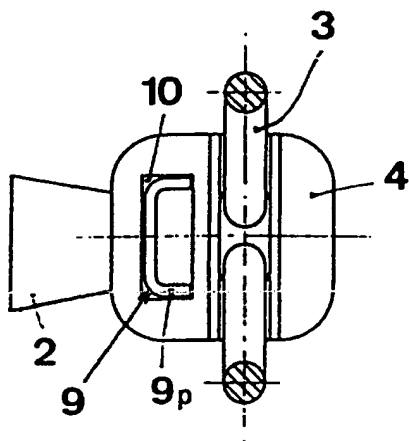
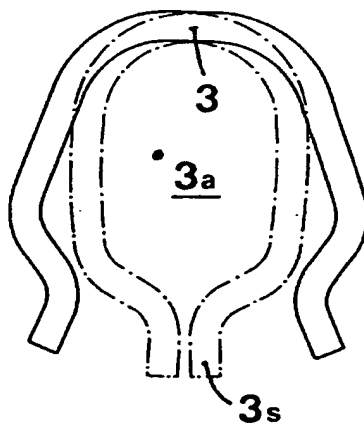


FIG.3



INTERNATIONAL SEARCH REPORT

Int. onal Application No
PCT/IB 97/00001

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 A44B19/26

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 6 A44B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	EP 0 034 251 A (YOSHIDA KOGYO) 26 August 1981 see page 4, line 3 - line 22; figures 1A-1C	1-4
Y	EP 0 089 695 A (YOSHIDA KOGYO) 28 September 1983 see page 11, line 7 - page 13, line 6; figures 15,16	1-4
A	WO 80 02494 A (ÉCLAIR PRESTIL) 27 November 1980 see page 6, line 20 - line 30 see page 8, line 21 - page 9, line 14; figures 6,10	1,2
	--- -/--	

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents :

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- *&* document member of the same patent family

Date of the actual completion of the international search

24 March 1997

Date of mailing of the international search report

09.04.97

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Monné, E

INTERNATIONAL SEARCH REPORT

Int onal Application No
PCT/IB 97/00001

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 3 641 634 A (ASAI) 15 February 1972 see column 1, line 34 see column 1, line 41 - column 2, line 9; figure 2 ---	1
A	EP 0 287 060 A (YOSHIDA KOGYO) 19 October 1988 see column 3, line 20 - line 24; figure 9 -----	1

INTERNATIONAL SEARCH REPORT

International Application No

PCT/IB 97/00001

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 0034251 A	26-08-81	AU 529530 B	09-06-83
		AU 6634181 A	20-08-81
		BR 8100580 A	18-08-81
		CA 1158028 A	06-12-83
		HK 11288 A	16-02-88
		US 4512064 A	23-04-85

EP 0089695 A	28-09-83	JP 58163302 A	28-09-83
		AU 536535 B	10-05-84
		AU 1237683 A	27-10-83
		BR 8301508 A	06-12-83
		CA 1213420 A	04-11-86
		GB 2117445 A,B	12-10-83
		HK 75588 A	30-09-88

WO 8002494 A	27-11-80	FR 2457083 A	19-12-80
		FR 2477851 A	18-09-81
		FR 2478446 A	25-09-81
		AU 5982980 A	15-01-81
		EP 0029042 A	27-05-81

US 3641634 A	15-02-72	NONE	

EP 0287060 A	19-10-88	AU 584005 B	11-05-89
		AU 1388488 A	13-10-88
		CA 1308539 A	13-10-92
		HK 98694 A	23-09-94
		SG 106894 A	28-10-94
		US 4790050 A	13-12-88
